

Session 2C: Climate-related Effects

Questions & Answers

Question not recorded.

A: That's the next step if we can find somebody who is anally compulsive enough to do the study. Arnie's work has taken about three years, just to get those sections. It's really detailed work. He has located some sites where there are old shelves of the sediments. If you get some overlapping years, you can conceivably go back much further in time, and we'd certainly like to try and do that. It would really be fascinating.

Question not recorded.

A: We haven't done that yet but we do have tree ring reconstructions, and actually there is some more comprehensive reconstructions going on right in the school of forestry. Trying to go back about 250 to 300 years, and what we'd like to do is a multi-proxy reconstruction using the geoducks, tree rings and so on. Some people are little skeptical of using the tree rings by themselves and so to the extent we can get the similar signal from different organisms, then I think we have a lot more confidence in the reconstructions.

Q: Why is Puget Sound and the Strait of Georgia so markedly different in terms of marine survival of say coho salmon than what you find on the coast?

A: The Puget Sound and Strait of Georgia are really separate ecosystems. We have an abundance of hake. There's really distinct separations in the two ecosystems and we have not been able to figure out why that is.

Q: Do you see the commercial industry of geoducks a threat to your research place?

A: Not so far. We are getting all geoducks that obviously they haven't been mined out. At least in that area around the north side of Protection Island. I might add that the kind of climate signal that we get out of the inner Sound or south Sound geoducks is definitely not as strong as what we have seen in Admiralty Inlet, but we have gotten some old geoducks. It's just the signal is not particularly interesting from a climate point of view.

Q: You talked about characterizing El Niño and PDO Puget Sound, the '97-'98 El Niño seemed to be very different from El Niños before. A signal coming straight from the south. Do you think that has any impact on your findings?

A: I think that it is. One of the things that was different about the '97-'98 El Nino events is that it started early. We saw high sea surface temperatures in June and August off the coast, and usually the warming signal in the seawater is in the winter time. And so, a lot of the impacts weren't so evident in '97 but they really were in '98, in terms of the phytoplankton response. And so, I think there were some differences there in the timing of it. It kind of delayed that whole response more towards '98 than '97. It's a little difficult because we have big clump of El Niños, '91, '92, '93, '94 and then you have a La Niña in '96 and then you have this big kahuna in '97-'98, so I couldn't go back farther into the data records so it's a little difficult, but yes, there were some differences.

Q: Can you take the data that you showed there and make any kind of predictions about what might happen if you go to a PDO position or if you were to go into some warm north Pacific conditions that with the climate change that would be more El Niño driven? And if not, is there historic data in Puget Sound sea surface temperature and stream flows that we could back to look at and try to compare to older El Niño/La Niña events and reconstruct some of that relationship?

A: The first part of your question if we shift into a different PDO phase. If we shift to a cold phase, it's going to tend to dampen the El Niño response and accentuate the La Niña responses. That's our best

understanding from what I hear from the climate specialists. So we could expect to see La Niñas having a little more weight and El Niños a little less. That's based on theory. In actuality, I don't know and the answer to your second question is there are temperature records that go back fairly far marine water temperature records that are decent. Chlorophyll, no, and things like nutrients, definitely not, so we are really guessing.

Q: It looks like from your data, that maybe eelgrass would be better under mild El Niño conditions, and perhaps eelgrass might grow faster. Have you seen any inverse relationship here?

A: It's too soon to tell. It would be speculating to say that would be the case; but certainly the water clarity affects eelgrass growth, and one of the interesting things that Jan said was that in '99, we had more light, higher PAR, so that might explain the start of the increase in eelgrass. It's too complex, not theoretically, but I don't know if that's the case for sure.

Question not recorded.

A: Definitely, we have a lot of data that shows lower depth distribution controlled by light energy and know what that number is now, the amount of PAR needed to be received during the spring and summer to survive so we have it pretty well nailed down. The linkage between the temperature and salinity and plankton and all that coupled with eelgrass variabilities is just too complex right now to figure out.